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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,673	12/12/2001	Vijay A. Deshpande	12801.0081.NPUS00	7069
26361	7590	01/30/2004	TEXS:08	
STEPHEN H. CAGLE HOWREY, SIMON, ARNOLD & WHITE, LLP 750 BERING DRIVE HOUSTON, TX 77057			EXAMINER DOROSHENK, ALEXA A	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/021,673	Applicant(s) DESHPANDE, VIJAY A.	
	Examiner Alexa A. Doroshenk	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3, 13 and 15 is/are rejected.
- 7) ☒ Claim(s) 4-12, 14 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 17, 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towler et al. (6,299,994) in view of Frye et al. (3,928,178).

With respect to claim 1, Towler et al. discloses an apparatus for converting hydrocarbon into hydrogen gas for use in a fuel cell comprising a reforming stack (26) for use as a hydrogen generation system (col. 1, lines 6-10), wherein the reforming stack (26) includes a plurality of cylindrical vessels (24 and 28) stackable without connecting piping (see figure 1) between each vessel (24 and 28).

Towler et al. also discloses that in order to produce the hydrogen stream, impurities, such as sulfur, must be removed from the feedstock and that any

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conventional means for removing sulfur can be used (col. 8, lines 50-63). Towler et al. further discloses wherein one such sulfur removal means can be a multi-stage hydrodesulfurization treatment (col. 9, lines 7-17), but fails to state wherein this purification means is in the form of a stack.

Frye et al. teaches a multi-stage (col. 1, lines 24-27) hydrocarbon hydrodesulfurization means (24) of a stacked formation (see figure 1). Frye et al. further discloses that this means provides optimal temperature control during operation (col. 2, lines 40-50) as well as having economic benefits (col. 4, lines 18-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multi-bed hydrodesulfurization means of Frye et al. as the specific multi-stage hydrodesulfurization means required by Towler et al. as it is merely the selection of specific means known to the art as well as for the recognized economic advantages and temperature control.

With respect to claim 2, the specific hydrodesulfurization (purification) stack (24) of Frye et al., provided above, includes cylindrical vessels (26, 28, 30, 32, 34, 36, 38) stackable without piping connecting the vessels (see figure 1).

With respect to claim 3, Towler et al. illustrates wherein the reforming stack (26) is aligned vertically (see figure 1).

With respect to claims 13 and 15, Towler et al. discloses an apparatus for converting hydrocarbon into hydrogen gas for use in a fuel cell comprising a reforming stack (26) for use as a hydrogen generation system (col. 1, lines 6-10), wherein the

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reforming stack (26) includes a plurality of cylindrical units (24 and 28) stackable (see figure 1) and which perform separate operational functions (co. 17, lines 13-41).

Towler et al. also discloses that in order to produce the hydrogen stream, impurities, such as sulfur, must be removed from the feedstock and that any conventional means for removing sulfur can be used (col. 8, lines 50-63). Towler et al. further discloses wherein one such sulfur removal means can be a multi-stage hydrodesulfurization treatment (col. 9, lines 7-17), but fails to state wherein this purification means is in the form of a stack.

Frye et al. teaches a multi-stage (col. 1, lines 24-27) hydrocarbon hydrodesulfurization means (24) of a stacked formation (see figure 1). Frye et al. further discloses that this means provides optimal temperature control during operation (col. 2, lines 40-50) as well as having economic benefits (col. 4, lines 18-29). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the multi-bed hydrodesulfurization means of Frye et al. as the specific multi-stage hydrodesulfurization means required by Towler et al. as it is merely the selection of specific means known to the art as well as for the recognized economic advantages and temperature control.

Towler et al. and Frye et al. are silent as to the cylindrical units being separable and modular. It is held that making an integral structure of a known device separable is an obvious variant of the device and is not the type of innovation for which a patent monopoly is to be granted. In this case one would be motivated to make the device separable for the obvious advantages of ease of replacement of the various units as

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well as to ease cleaning of the device. The mere fact that a given structure is integral does not preclude its consisting of various elements. Nerwin v. Erlichman, 168 USPQ 177, 179 (PTO Bd. of Int. 1969)

Allowable Subject Matter

4. Claims 4-12, 14 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. New claims 14 and 16 are indicated as allowable subject matter for the same reasons previously presented with regard to claims 4-12.

Response to Arguments

5. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

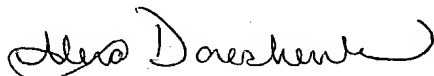
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in cursive script, appearing to read "Alexa Doroshenk".

Alexa Doroshenk
Patent Examiner
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January 21, 2004